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# **Suicide and Open Verdict Deaths among Males in the UK Regular Armed Forces**

- **Rates (1984-2003)**
  - examines the suicide and open verdict mortality rates among the UK regular Armed Forces (1984-2003) and made comparisons with the UK general population (1993-2003).
- **Methods (1984-2002)**
  - examines the methods used by UK regular Armed Forces personnel to commit suicide and makes comparisons across the three Services and with the UK general population.
- **MOD Suicide Prevention Strategy**





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# Suicide Rates

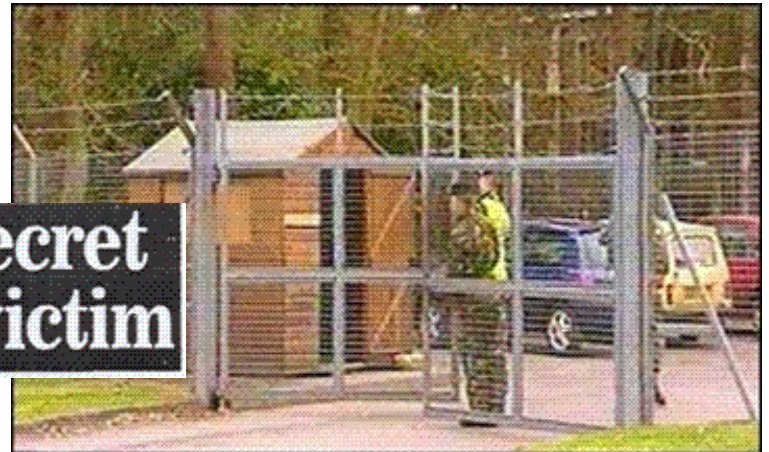
- Suicides among the UK Armed Forces remain a topic of public interest for Parliament, the media, and the families of the deceased

**Deepcut families make  
new appeal for inquiry**

**Deepcut deaths 'were no suicides'**



**Sex slave secret  
of Deepcut victim**



# Suicide Rates - Data & Methods

- 'Suicide' was defined as deaths where a coroner had confirmed the suicide or given an open verdict. This is the definition used by the Office for National Statistics for the publication of national mortality statistics.
- Service-specific age-standardised rates were calculated using the 2003 Tri-Service male population to make comparisons across the Services.
- Three-year moving average age-standardised rates were calculated – this removes some of the random variation due to small numbers of suicides by year and improves the ability to analyse trends over time.



# Suicide Rates - Data & Methods

- Age and year adjusted standardised mortality ratios (SMR) were calculated to make comparisons with the UK general population using data over a 10-year period (1993-2002).
- Standardised Mortality Rates (SMR) are defined as the ratio of the number of deaths *observed* in the study population (UK regular Armed Forces) to the number of deaths *expected* if the study population had the same age-group and year-specific rates as the standard population (UK general population).



# Suicide Rates - Data & Methods

- By convention, SMRs have been multiplied by 100. An SMR over (or under) 100 indicates a higher (or lower) number of observed deaths than expected (based on standard population rates), with an SMR of 100 implying that the number of observed deaths is equivalent to the number expected (based on standard population rates).
- Factors analysed:
  - service, gender, age, country, rank, trained/untrained



## Suicide Rates - Results

- Between 1984 and 2003 there were 461 suicides and 82 open verdict deaths.
- Of these, 7 suicides and 4 open verdict deaths occurred in 2003.
- Verdicts are pending for 44 deaths (13 in 2003).
- There were 12 suicides and open verdict deaths among female personnel, a number too small to analyse for statistical trends.





# Suicide Rates - Results

- Between 1984-2003, the male age-standardised rate per 100,000 for suicides in the
  - Army** (rate=13, 95% CI=12-15, based on 336 deaths) was **higher** than in the
  - Navy** (rate=8, 95% CI=6-10, based on 80 deaths) and the
  - RAF** (rate=8, 95% CI=7-10, based on 115 deaths).
- Among males aged under 25 years in the Army, the rates were higher than those for the Navy or the RAF.
- Between 1989 and 2003, untrained Army males aged under 25 years had statistically significantly **lower** suicide rates than those of the same age who had been trained.

## 2003 Regular Strengths:

RN	41,550
Army	112,130
RAF	53,240
Total	206,920



# Suicide Rates - Results

*Number (percentage\*) of suicides by Service and age at death for men only, 1984-2003*

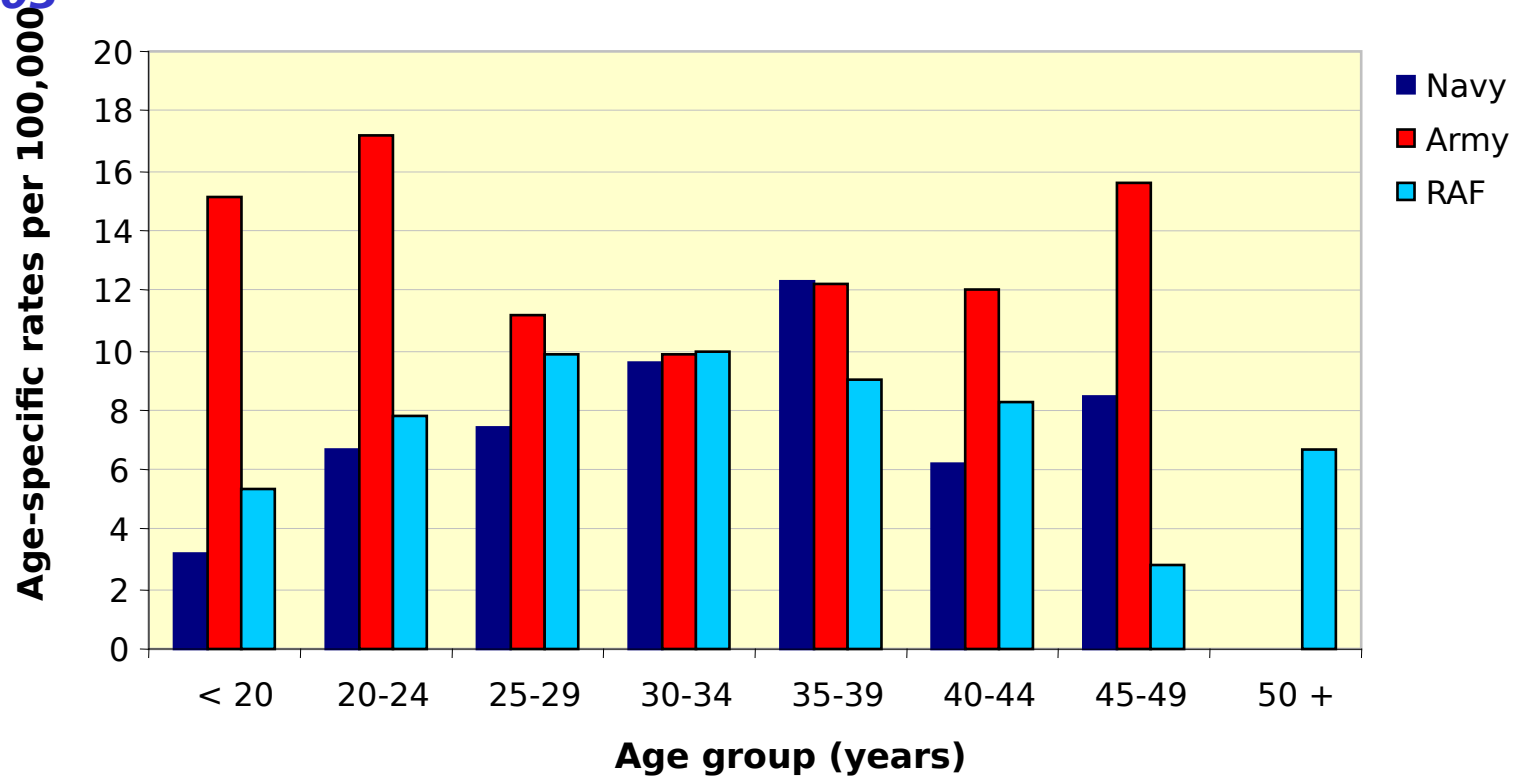
Age-group (years)	Service						Total Tri-Service % distribution 1984-2003		
	Navy		Army		RAF			Total	
	N	(%)	N	(%)	N	(%)		N	(%)
<20	3	(4%)	56	(17%)	4	(3%)	63	(12%)	11%
20-24	17	(21%)	126	(38%)	23	(20%)	166	(31%)	26%
25-29	17	(21%)	63	(19%)	31	(27%)	111	(21%)	23%
30-34	17	(21%)	36	(11%)	24	(21%)	77	(15%)	16%
35-39	19	(24%)	34	(10%)	18	(16%)	71	(13%)	13%
40-44	4	(5%)	13	(4%)	10	(9%)	27	(5%)	6%
45-49	3	(4%)	8	(2%)	2	(2%)	13	(2%)	3%
50+	-		-		3	(3%)	3	(<1%)	2%
Total	80	(100%)	336	(100%)	115	(100%)	531	(100%)	100%

\* Percentages (%) may not add up to 100% due to rounding



# Suicide Rates - Results

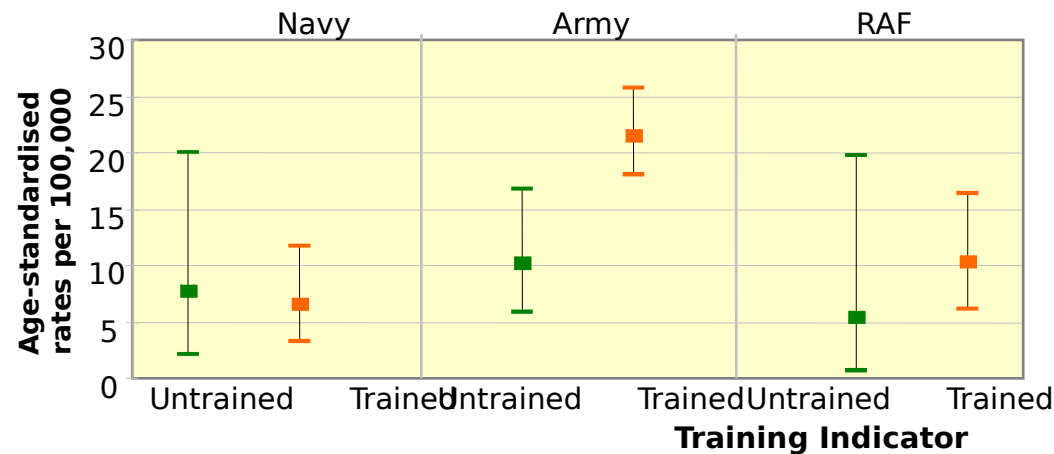
*Male age-specific rates (per 100,000) for suicides by Service, 1984-2003*



# Suicide Rates - Results

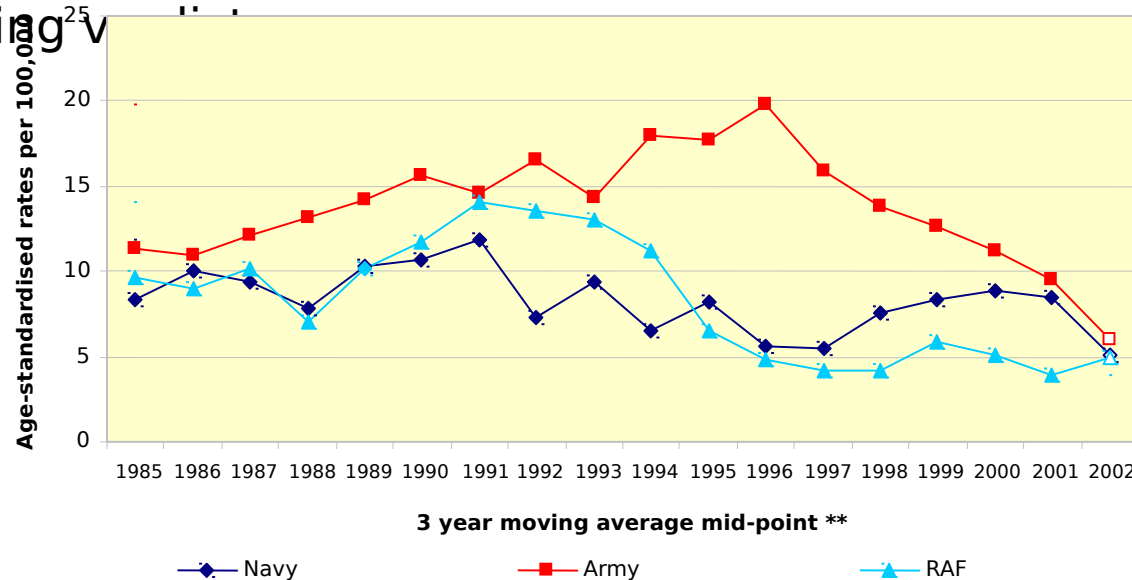
- Between 1989 and 2003, untrained Army males aged under 25 years had statistically significantly **lower** suicide rates than those of the same age who had been trained.

*Male age-standardised suicide rates (per 100,000) and 95% confidence intervals for personnel aged under 25 years by Service and training indicator, 1989-2003*



# Suicide Rates - Results

- The 3-year moving average age-standardised Tri-Service rate fell by 43% between the 3-year periods 1995-1997, when the rate was at its peak, and 2000-2022, from 14.3 per 100,000 to 8.2.
- These findings may be affected by the delayed reporting of awaiting v



# Suicide Rates - Comparison with UK standard

- Between 1993 and 2002 UK Forces had statistically significantly **lower** number of suicides than expected compared to the UK general population (SMR=47, 95% confidence interval (CI)=41-54, based on 221 deaths).
- The number of deaths in each Service, for each age-group, was lower than the number expected based on UK general population rates, **except for young Army males under 20 years**, where there were 1.7 times more deaths than expected (SMR=172, 95% CI 116-248, based on 29 deaths).



# Suicide Rates - Comparison with UK standard

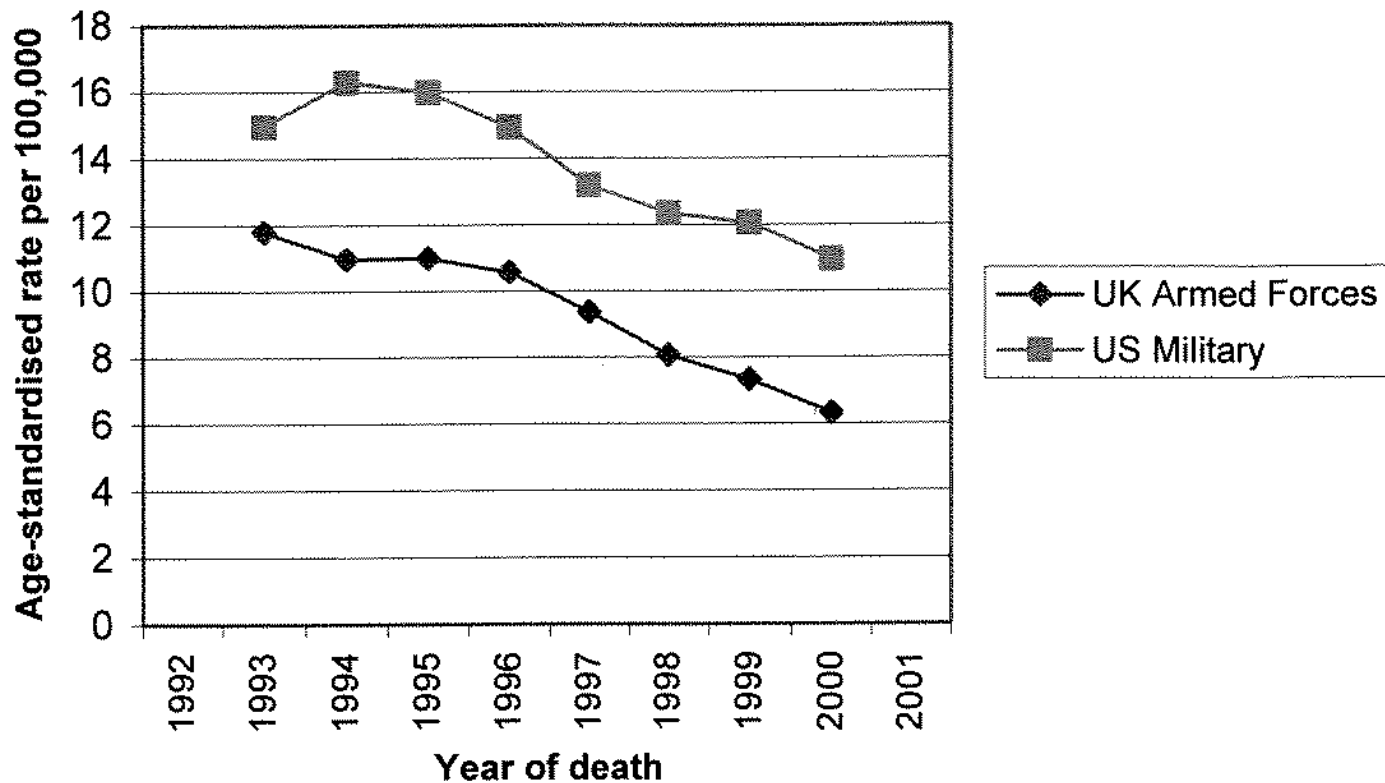
*Number of suicides and standardised mortality ratios (SMR)\* (95% confidence intervals (CI)) by Service and age-group for men only, 1993-2002*

Age-group (years)	Service									Tri-Service		
	Navy			Army			RAF					
	N	SMR	(95% CI)	N	SMR	(95% CI)	N	SMR	(95% CI)	N	SMR	(95% CI)
<20	2	59	(7-212)	29	172	(116-248)	1	48	(1-270)	32	145	(102-204)
20-24	8	39	(17-78)	58	89	(69-116)	5	27	(9-62)	71	68	(54-86)
25-29	5	20	(7-47)	28	43	(28-62)	8	24	(10-48)	41	33	(24-45)
30-34	4	18	(5-47)	18	40	(24-63)	8	25	(11-50)	30	30	(21-44)
35-39	9	48	(22-92)	14	47	(26-78)	9	39	(18-73)	32	45	(32-63)
40-44	2	29	(4-106)	5	52	(17-121)	3	24	(5-69)	10	34	(16-63)
45-49	1	25	(1-137)	3	62	(13-180)	1	15	(0.4-82)	5	32	(10-74)
50+	-			-			-			-		
TOTAL	31			155			35			221		



# Suicide Rates - Comparison with DOD

Figure 3: Three-year moving average age-standardised rates (per 100,000) for suicide among the US military and UK Armed Forces for men only, 1992-2001





# Suicide Rates - Comparison with DOD

*Three-year moving average age-standardised rates per 100,000  
for suicide among the US military and UK Armed Forces by  
year of death for men only, 1992-2001*

Year of Death	UK Armed Forces	US Military
	Rate	Rate
1992	-	-
1993	12	15
1994	11	16
1995	11	16
1996	11	15
1997	9	13
1998	8	12
1999	7	12
2000*	6	11
2001*	-	-

\* The rates are likely to change when coroner's verdicts are received



# Suicide Rates - Discussion

- **Small numbers**
  - possibility of making chance assumptions is increased
  - no adjustments for multiple comparisons
- **Low SMRs in general**
  - healthy worker effect?
  - other aspects of military life - eg group loyalty, bonding, mutual dependence?
  - could be higher if service leavers were followed up



# Suicide Rates – Discussion

- **Higher SMR in Army under 20s**
  - statistical artifact?
  - higher than average morbidity? (data lacking)
  - access to means? (supported)
  - Service-specific recruitment criteria? (speculative)
  - deployment effect? (data lacking)
  - other confounders – social class, geographic location etc?
- **Is there a declining trend?**
  - needs awaiting-verdict information to confirm



# Suicide Methods

- Between 1984 and 2002, the most common methods in the forces as a whole were:
  - hanging, strangulation and suffocation (32%)
  - poisoning by gases in domestic use/other gases and vapours (32%)
- In both the Navy and the RAF hanging and poisoning by gases account for about 75% of suicides, while 8% of suicides were due to firearms
- The most common methods in the Army were hanging (32%) and firearms/explosives (31%)

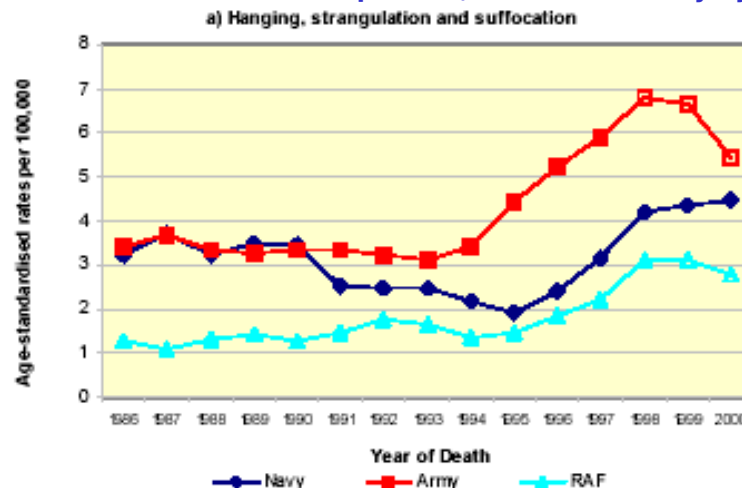


# Suicide Methods - Trends

- **Hanging**

- For each Service, suicide rates due to hanging have increased since the mid 1990's, with the highest rates being observed within the Army.
- Between 1984 to 2002 suicide rates due to hanging have increased by 70%.
- The Army had significantly higher age-standardised suicide rates (per 100,000) due to hanging than the RAF (Army: rate=4.1, 95% CI=3.4-4.9, based on 104 deaths; RAF: rate=1.7, 95% CI=1.1-2.6, based on 23 deaths)

Five-year moving average age-standardised suicide rates (per 100,000) for men only by Service and method based on data from 1984-2002\*

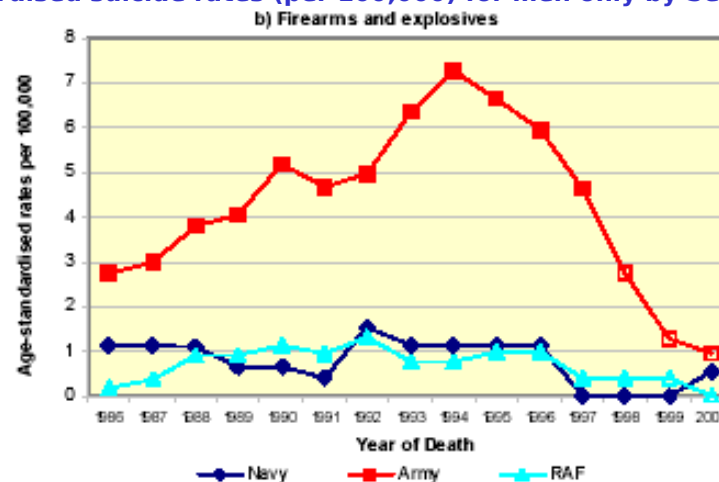


# Suicide Methods - Trends

- **Firearms and explosives**

- No change was apparent in the suicide rates due to firearms for the Navy and the RAF, peak rates were observed among the Army for the mid-1990's followed by a steady decline.
- Overall, suicide rates due to firearms have decreased by 56% over the 19-year period.
- The Army had significantly higher rates due to firearms than both the Navy and the RAF (Army: rate=3.7, 95% CI=3.0-4.5, based on 100 deaths; Navy: rate=0.6, 95% CI=0.2-1.4, based on 6 deaths; RAF: rate=0.6, 95% CI=0.3-1.3, based on 8 deaths.)

Five-year moving average age-standardised suicide rates (per 100,000) for men only by Service and method based on data from 1984-2002\*



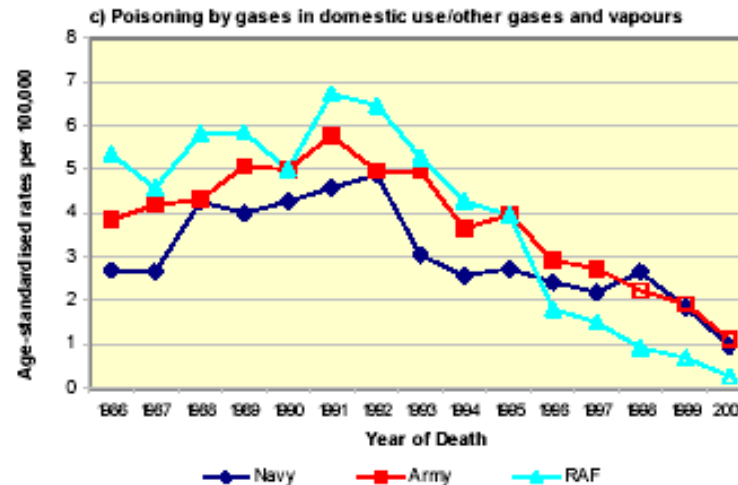
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# Suicide Methods - Trends

- **Poisoning by gases**

- For each Service, suicide rates due to poisoning by gases peaked in the early 1990's, followed by a steady decline.
- Overall, suicide rates due to poisoning by gases have decreased over the 19-year period by 76%
- All three Services had similar suicide rates due to poisoning by gases. (Tri-Service: rate=3.5, 95% CI=3.0-4.1, based on 157 deaths.)

Five-year moving average age-standardised suicide rates (per 100,000) for men only by Service and method based on data from 1984-2002\*



# Suicide Methods - Comparison with UK population

- For the period 1992-2001, the UK Armed Forces had a statistically significantly **lower** number of suicides from **hanging or poisoning by gases** than expected compared with the UK general population
  - hanging: standardised mortality ratio (SMR)=45, 95% confidence interval (CI)=36-55, based on 85 deaths;
  - poisoning by gases: SMR=66, 95% CI=51-85, based on 57 deaths.
- The Army had significantly **more suicides from firearms** than expected, when compared with the UK population
  - SMR=673, 95% CI=514- 881, based on 53 deaths
- The age-specific SMRs for firearms, in the Army, were all **significantly raised**. These patterns were not apparent in the Navy or the RAF





# Suicide Methods - Discussion

- The analyses are based on a relatively small number of deaths.
- There were a higher number of suicides due to firearms within the Army compared with the Navy, the RAF and the UK general population
  - reflecting the increased availability of firearms within the Army?
  - there is evidence of a strong association between suicide and availability of means
  - future studies may need to compare Army firearms-related suicides with comparable occupational groups eg farm workers
- The reduction in suicide rates due to poisoning by gases has also been seen nationally and coincides with legislation introduced in 1993 that required new petrol vehicles to be fitted with catalytic converters, which reduce carbon monoxide emissions.
  - has this contributed to the increased rates due to hanging?



# Suicide Prevention Strategy

- ‘Owned’ by Director General Service Personnel Policy
- Overseen by Armed Forces Mental Wellbeing Steering Group
- Strategy covers suicide and deliberate self harm (DSH)
  - does not cover ‘operational stress’ nor stress in general and other aspects of mental ill health except as they relate to suicide or DSH



# Suicide Prevention Strategy

- ‘Owned’ by Director General Service Personnel Policy
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  - does not cover ‘operational stress’



# Suicide Prevention Strategy

## Elements of the strategy

- Better understanding
- Education and Training
- Detection and management
- Preventive Measures



# Suicide Prevention Strategy

## Initiatives

- Validation of MOD data with other national data
- Investigation of social background
- Development of comparisons with UK national data
- 'Psychological autopsy' to determine risk factors
- Increased understanding of deliberate self harm
- Investigation of stress as it relates to suicide and DSH
- Stigma reduction



# Previous Work

Reference	Time period	Findings
<b>Coggon et al (1995)</b>	1979-80, 1982-90	Male UK Armed Forces: did not differ from the population of England and Wales
<b>Inskip et al (1995)</b>	1979-80, 1982-90	Female UK Armed Forces: did not differ from the population of England and Wales
<b>Kelly &amp; Bunting (1998)</b>	1982-87	Male UK Armed Forces: Proportional mortality ratio (PMR)=84, 95% confidence interval (CI)=71-98
<b>Davis (Personal Communication)</b>	1991-96	Male UK Armed Forces: PMR=91, 95% CI=78-106

